



**THIRD QUARTER 1996 PROGRESS REPORT
L.E. CARPENTER SITE
WHARTON, NEW JERSEY**

October 1996

Work Order No.: 06720-018-003-0003

Prepared on behalf of

L.E. CARPENTER AND COMPANY

For the

**NEW JERSEY DEPARTMENT OF ENVIRONMENTAL
PROTECTION**

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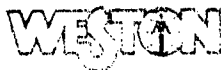


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SECTION 1.0

INTRODUCTION AND SCOPE

L.E. Carpenter and Company (L.E. Carpenter) is pleased to submit this Quarterly Monitoring Report for the former manufacturing facility located at 170 North Main Street, Borough of Wharton, Morris County, New Jersey. This report provides a summary of field activities performed at the site during the period of July 1996 through September 1996, and presents measurements and results obtained during the third quarter 1996 groundwater monitoring event. The quarterly monitoring events are performed at the site to comply with Paragraph 35 of the 1986 Administrative Consent Order issued by New Jersey Department of Environmental Protection (NJDEP) to L.E. Carpenter. Results from this sampling event have been used to update the existing groundwater quality database for the shallow and intermediate aquifer zones located beneath the site.

Section 1.0 of this report presents an introduction, the monitoring activities conducted, and the procedures followed during this reporting period. Section 2.0 presents the results of the quarterly groundwater sampling. Section 3.0 discusses the results and findings of the activities conducted. The figures, tables, monitoring well sampling data forms, and the analytical summary sheets are presented in Appendix A, B, C, and D, respectively.

1.1 GROUNDWATER MONITORING ACTIVITIES

On 17 September 1996, Roy F. Weston, Inc. (WESTON®) personnel performed the quarterly sampling of six groundwater monitoring wells at the L.E. Carpenter site. Quarterly groundwater levels and product thickness measurements were collected on 18 and 19 September 1996. The groundwater samples collected were analyzed for select volatile organic compounds that include benzene, toluene, ethylbenzene, and total xylenes (BTEX) utilizing United States Environmental Protection Agency (EPA) Method 602 in accordance with WESTON's letter correspondence to NJDEP detailing the revised quarterly sampling monitoring dated 7 June 1995. Table 1 in Appendix B lists the monitoring wells and sampling parameters for the Third Quarter event.

1.2 WATER LEVEL AND PRODUCT THICKNESS MEASUREMENTS

One round of water level and product thickness measurements were collected from the study area's monitoring wells, well points, and staff gauges on 18 and 19 September 1996. Figure 1 (Appendix A) presents the locations of all on-site monitoring points. Water levels were measured in all of the existing monitoring points, with the exception of well point WP-A2, which has a bent casing/riser; MW-24, which had an obstruction in the well casing; MW-13S, MW-13R, GEI-11, DC-P0, and WP-A3.

Water level and product thickness measurements were obtained using either a calibrated oil/water interface probe or an electronic water level indicator. In order to validate the thickness of the product measured with the oil/water interface probe, product thicknesses were also determined in select monitoring points by recovering the product column in a transparent, bottom-flap bailer and measuring its thickness with a tape measure. Table 2 (Appendix B) presents a summary of the product thicknesses measured with both the bailer and the probe. Surface water level measurements were also collected at seven staff gauges, and at the RP-1 and RP-4 measurement points marked on the wall adjacent to the Rockaway River and Washington Forge Pond, respectively. Staff gauge DC-P0 which is located in the drainage channel could not be located due to heavy vegetation. As a result a water level measurement could not be collected from the staff gauge. All downhole equipment was decontaminated between monitoring points.

1.3 GROUNDWATER SAMPLING

On 17 September 1996, groundwater samples were collected from six on-site monitoring wells as part of the revised quarterly sampling program, which was initiated during the second quarter 1995 sampling event. The scope of the revised quarterly groundwater sampling event was presented in WESTON's letter correspondence to the NJDEP dated 7 June 1995. Envirotech Research, Inc., a NJDEP certified laboratory, was utilized for sample bottle preparation and sample analyses.

1.3.1 General Groundwater Sampling Procedures

Groundwater samples were collected in accordance with protocols provided in the NJDEP's Field Sampling Procedures Manual (May, 1992). Each well was purged of three to five well volumes of groundwater prior to sampling utilizing either a laboratory decontaminated teflon bailer, a well wizard pump (MW-25), or a peristaltic pump (MW-22). The laboratory decontaminated teflon bailers were attached to a decontaminated teflon coated stainless steel leader.

During the well purging procedures, field measurements (temperature, specific conductivity, pH, and milli-volts) were obtained using a calibrated YSI 3560 Water Quality Monitoring System. A calibration check was conducted on 17 September prior to sampling to identify the instrument's accuracy. A minimum of two readings (initial and final) were collected during the purge procedures. These data are presented on the groundwater sampling forms located in Appendix C.

Groundwater samples were collected upon completion of well purging. Teflon bailers were used to collect the sample from wells MW-4, MW-14I, MW-15S, and MW-15I. The bailers were lowered slowly into the well to avoid aeration of the groundwater sample, retrieved, and then the sample was transferred into the laboratory provided sample bottles. The samples from MW-22 and MW-25 were transferred directly from the pump tubing into the sample bottles. All samples were labeled and placed in a laboratory cooler on ice at 4°C. The samples were transported to the laboratory within 24 hours of collection.



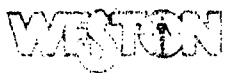
A field blank was collected at a frequency of one field blank per day of groundwater sampling, as required by NJDEP's Field Sampling Procedures Manual dated May, 1992. Field blanks were obtained by pouring laboratory provided analyte-free water over a laboratory decontaminated teflon bailer. A laboratory prepared trip blank was included and analyzed for BTEX parameters by EPA Method 602.

A duplicate sample was collected at a frequency of 5 percent of the total number of groundwater samples collected per analyte throughout the sampling event. As per the 5% frequency, one duplicate sample, which was designated as MW-30 (duplicate of MW-15I), was collected during the sampling event.

1.4 PRODUCT RECOVERY

The enhanced "passive" product recovery system was taken out of service for most of the third quarter due to aquifer testing activities at the site. The system was returned to operation on 19 September. Skimmer pumps are present in MW-3, MW-10, MW-11S, and WP-B4 to recover product.

During the third quarter, product was removed from several wells and well points by manual bailing. All recovered product was containerized in the above ground storage tank located adjacent to the recovery system shed in the middle of the site. Manual bailing was performed on various days throughout the third quarter. The total volume of product that was manually bailed during the reporting period was approximately 37 gallons. This was in addition to a amount of product which was collected by the "passive" recovery system during its limited operation. Approximately 147 gallons of product has been recovered during 1996.



SECTION 2.0

RESULTS

2.1 GROUNDWATER ELEVATION DATA

Groundwater elevation data for the 18 and 19 September 1996 measurement event are presented in Table 3 (Appendix B). Equipotential maps for the shallow and intermediate aquifer zones are presented in Appendix A. Water table depression in the monitoring points, caused by the presence of Light Non-Aqueous Phase Liquid (LNAPL), was corrected for using the method presented in previous quarterly reports (WESTON, April 1992). This formula is the following:

$$(\text{Static Depth to Water}) - (\text{Apparent Product Thickness} \times \text{Specific Gravity}) = \text{Corrected Depth to Water}$$

At monitoring points where field specific gravity tests have been performed, the results were used in the correction of water level elevations. A summary of the field determined specific gravity results were presented in WESTON's Third Quarter 1995 Progress Report (October 1995), and are included as Table 5 in Appendix B of this report.

2.2 ANALYTICAL RESULTS

A summary of the analytical results for the BTEX analysis of groundwater samples collected from the wells are presented in Table 4, in Appendix B. Copies of the summary pages from the analytical data packages are provided in Appendix D. Copies of the full data packages will be provided at the project's conclusion in the Remedial Action Report.

SECTION 3.0

DISCUSSION

In order to further define the hydrogeological conditions at the site, data generated during field investigative activities conducted during this quarter were evaluated. The groundwater elevation and product thickness measurements collected on 18 and 19 September 1996, analytical data obtained, and field observations made during this most recent groundwater sampling event were compared to, and evaluated within the context of the existing database.

3.1 GROUNDWATER ELEVATION AND PRODUCT THICKNESS MEASUREMENTS

Corrected water level elevations were within the historic range of water levels collected during the third quarter. A comparison of these data with Second Quarter 1996 data does not identify a pronounced upward or downward trend in the water level elevations in the monitoring points. Twenty-seven (27) measuring points had downward fluctuations in corrected groundwater elevations which ranged between 0.02 foot at DC-P2 to 3.09 feet at MW-16S. Thirty-eight (38) measuring points had upward fluctuations which ranged between 0.01 feet at DC-P4 and 1.82 at MW-17D.

Equipotential maps of the shallow and intermediate aquifer zones were constructed based on the results of the 18 and 19 September 1996 monitoring event. The maps for the shallow and intermediate aquifer zones are presented as Figure 2 and Figure 3 (Appendix A), respectively. Groundwater flow in the shallow aquifer zone is similar to preceding quarterly events. Water level elevations from recently surveyed wells (i.e., MW-6R, CW-1, and CW-3) indicate that a pronounced groundwater mound is present in the southeast portion of the site. Additional quarterly groundwater monitoring data will be required to determine an explanation for this groundwater mound (i.e., a short-term seasonal event). It should be noted that during the preceding aquifer constant rate pumping test, drawdown within these monitoring points was limited (WESTON, 1996). Groundwater flow direction and gradient in the intermediate aquifer zone was similar to preceding events.

3.2 PRODUCT DELINEATION

Product delineation was performed by measuring product thickness for each monitoring point. At each location where product was encountered, its thickness was measured using an oil/water interface probe, to one hundredth (0.01) of a foot.

Product was encountered in twelve (12) of the monitoring points. There was no general trend of increase or decrease in apparent product thickness in the monitoring points during the 18 and 19 September monitoring event as compared to the second quarter 1996. Seven (7) monitoring points had an increase in their apparent product thicknesses, while eight (8) monitoring points

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exhibited a decrease in thickness. The greatest apparent product thickness decrease was 3.74 feet in WP-A6, and the greatest increase was 3.06 feet in MW-11S. An isopach map of apparent product thickness measured with the calibrated oil/water interface probe is provided as Figure 5 (Appendix A). The thickest layer of product identified on the 18 and 19 September measurement event was 4.64 feet of product in MW-11S. The product footprint remained similar to the Second Quarter 1996 event, and has remained consistent throughout the 1995 and 1996 monitoring events.

Evaluation of product thickness measurements determined by the probe and the bailing measurement method indicate slight differences between the two measurement techniques. The most significant difference (1.64 feet) between the two techniques was identified at monitoring MW-11S. The difference in measurements is attributed to the product adhering to the probe's sensors.

3.3 GROUNDWATER SAMPLING ANALYTICAL RESULTS

Analytical data concerning the distribution of BTEX compounds were compiled as part of the quarterly groundwater sampling effort. The analytical results were compared to the Groundwater Quality Standards (GWQS) and the Discharge Criteria presented in the Record of Decision (ROD) dated 20 April 1994.

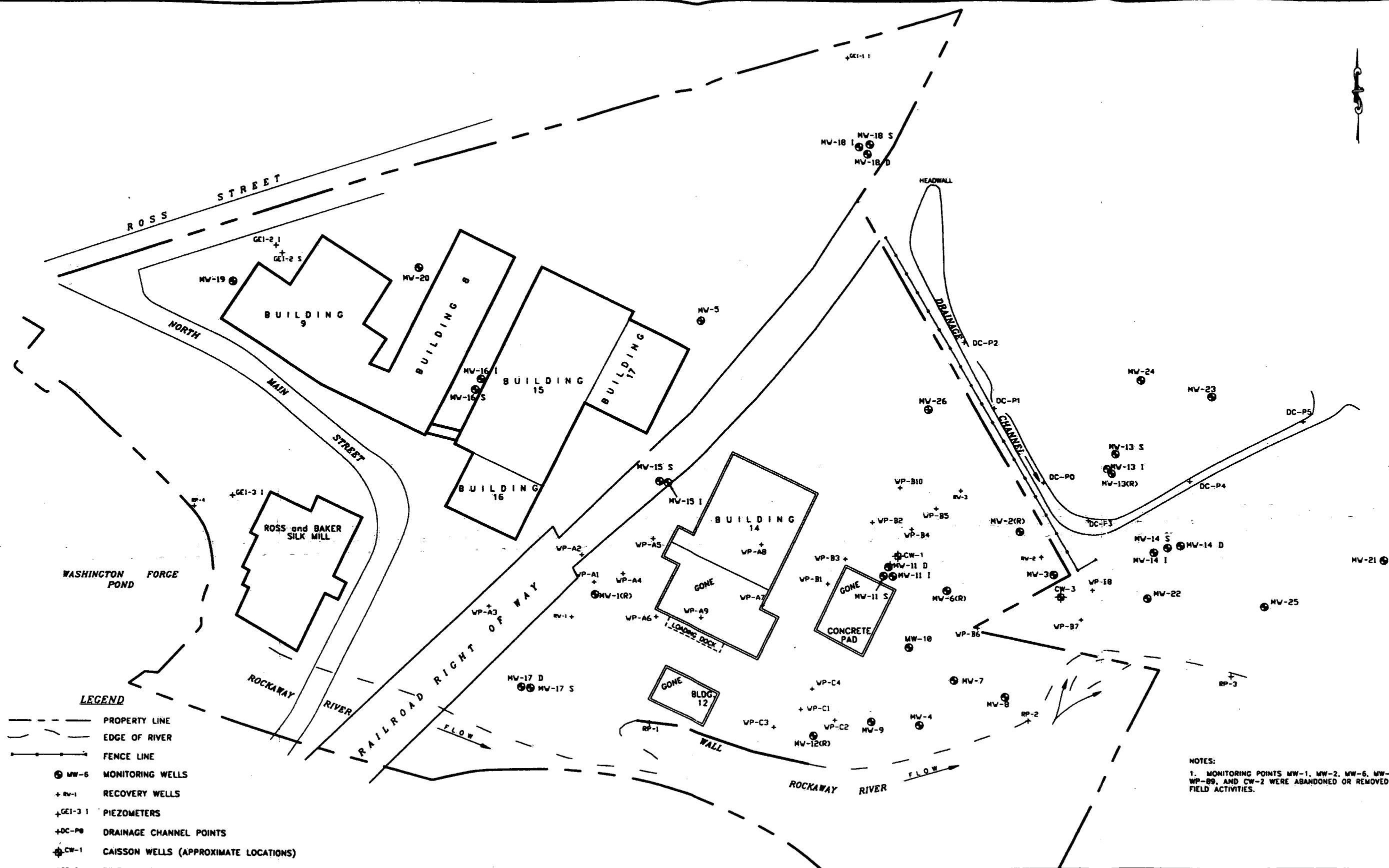
The comparison indicated that only ethylbenzene and xylenes (total) were detected at concentrations above the relevant criteria. During the third quarter, ethylbenzene was detected above the ROD established discharge criteria of 350 micrograms per liter (ug/L) in one location (MW-22) at a concentration of 359 ug/L, but below the 700 ug/L GWQS. Xylenes (total) were detected above the ROD established criteria of 20 ug/L and above the GWQS of 40 ug/L in one location (MW-22) at a concentration of 1,320 ug/L.

Third quarter analytical results detected in MW-22 in excess of the site-established criteria were evaluated with respect to the three preceding sampling events in which MW-22 was sampled (Third Quarter 1995, Fourth Quarter 1995, and Second Quarter 1996. In all three sampling events, xylenes (total) have been detected at concentrations in excess of the site-established criteria. Ethylbenzene was detected at concentrations of the site-established criteria in two of the three sampling events.

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APPENDIX A

FIGURES



NO. 1, 00130-018-003-003-00 DATE: 10/23/96
BY: J. L. CARPENTER, JR. FOR: L.E. CARPENTER AND COMPANY

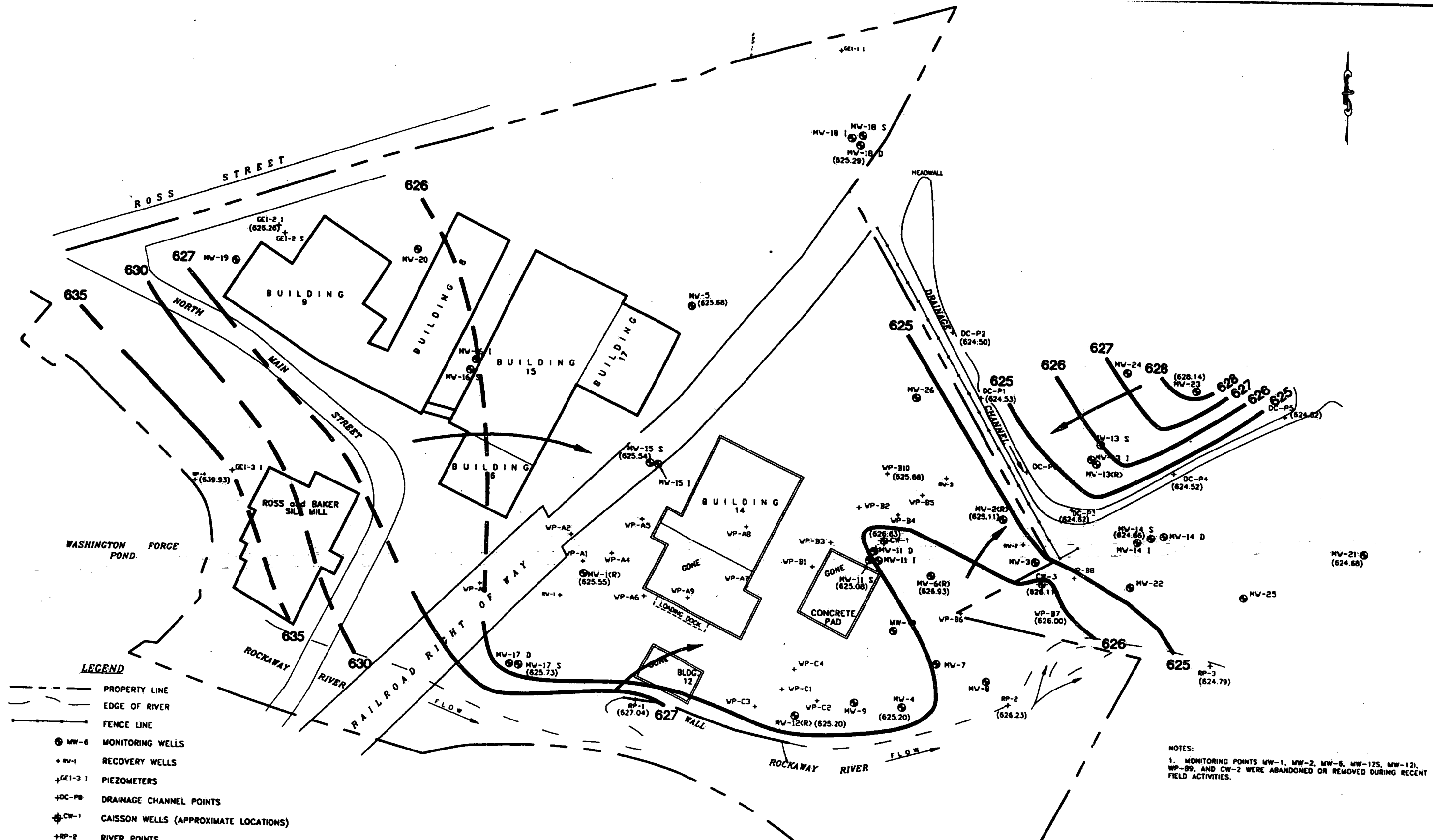
WESTON
MANAGERS DESIGNERS/CONSULTANTS

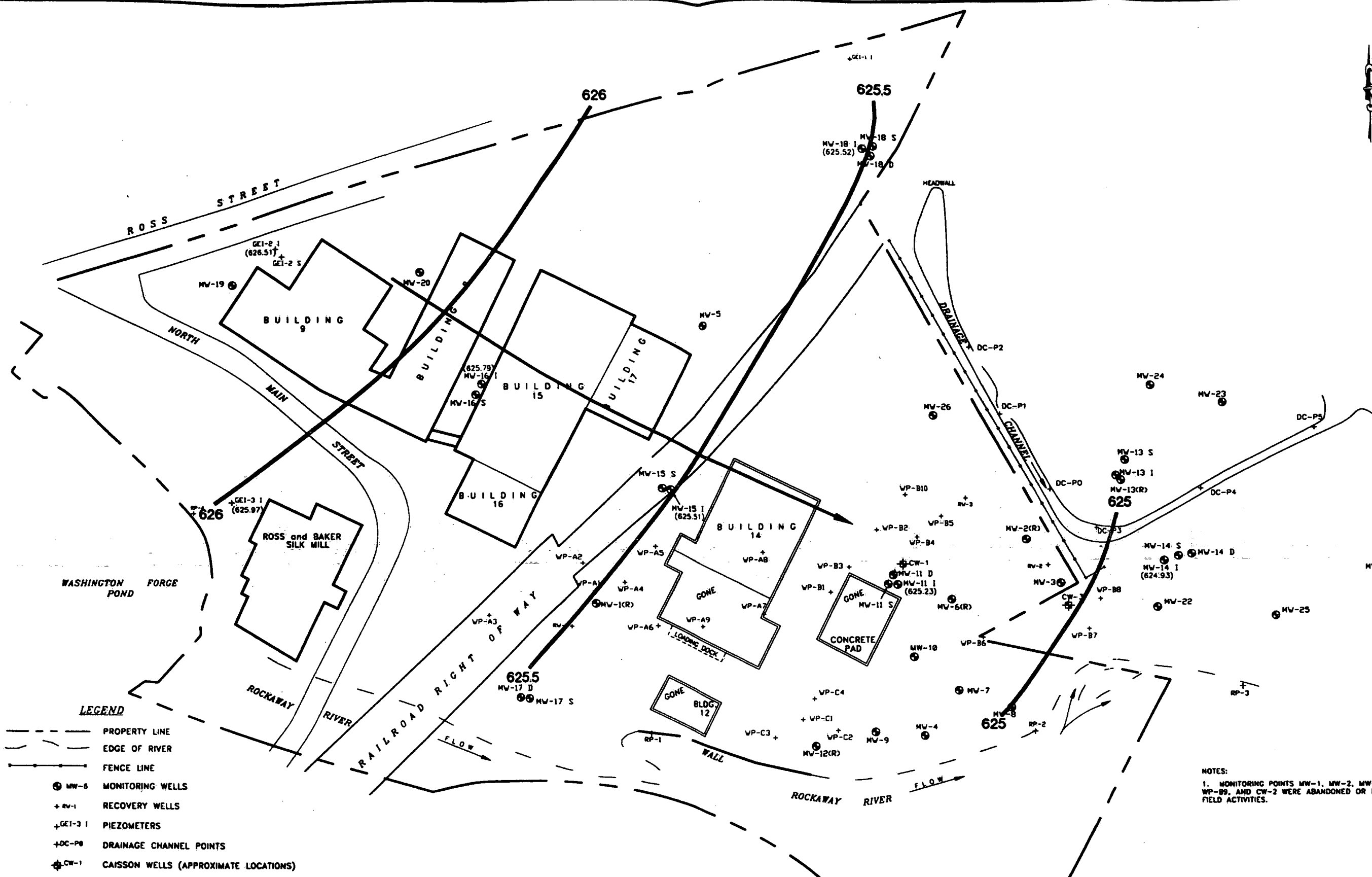
PROJECT NAME: **THIRD QUARTER 1996
PROGRESS REPORT**
WHARTON, NEW JERSEY
CLIENT NAME: **L.E. CARPENTER AND COMPANY**

MONITORING WELL LOCATIONS

DATE: **OCTOBER 1996**

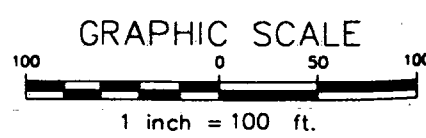
FIGURE #: **1**





LEGEND

- PROPERTY LINE
- EDGE OF RIVER
- FENCE LINE
- MW-6 MONITORING WELLS
- + RV-1 RECOVERY WELLS
- + GEI-3 1 PIEZOMETERS
- + DC-P8 DRAINAGE CHANNEL POINTS
- + CW-1 CAISSON WELLS (APPROXIMATE LOCATIONS)
- + RP-2 RIVER POINTS
- + VP-B10 WELL POINTS



NOTES:
1. MONITORING POINTS MW-1, MW-2, MW-6, MW-12S, MW-12I, WP-B9, AND CW-2 WERE ABANDONED OR REMOVED DURING RECENT FIELD ACTIVITIES.

NO. 001730-000-0000-0000 DATE: 10/10/96
FILE NAME: 10-10-96-0000.DWG BY: B. MC

	PROJECT NAME:	THIRD QUARTER 1996 PROGRESS REPORT	
	WHARTON, NEW JERSEY		
	CLIENT NAME:	L.E. CARPENTER AND COMPANY	
		DATE:	OCTOBER 1996
		FIGURE #:	3

APPENDIX B

TABLES

TABLE i
Third Quarter Sample Summary
L.E. Carpenter Site
Wharton, NJ

Well	Parameters
MW-4	BTEX
MW-15I	BTEX
MW-15S	BTEX
MW-14I	BTEX
MW-22	BTEX
MW-25	BTEX
MW-30	BTEX
9/16-FB01	BTEX
TRIP BLANK	BTEX

Notes:

- BTEX = benzene, toluene, ethylbenzene, and xylenes (total).
- MW-30 is a blind duplicate of MW-15I.
- 9/16-FB01 is a field blank.

TABLE 2
 PRODUCT THICKNESS COMPARISON:
 OIL/WATER PROBE VS. BOTTOM-FLAP BAILER
 L.E. CARPENTER SITE
 WHARTON, NJ

Well Number	Probe Measurement	Bailer Measurement	Difference
MW-1	1.57'	0.67'	0.9'
RW-1	0.14'	sheen	0.14'
WP-A1	1.61'	1.0'	0.61'
WP-A8	1.60'	2.0'	0.40'
MW-11S	4.64'	3.0'	1.64'
WP-A6	1.11'	0.83'	0.28'
WP-A9	0.71'	1.5'	0.79'

TABLE 3
WATER LEVEL/PRODUCT THICKNESS MEASUREMENT DATA
SEPTEMBER 18 AND 19, 1996
L.E. CARPENTER SITE
WHARTON, NEW JERSEY

MONITORING POINT DESIGNATION	MEASURING POINT ELEVATION (FT. MSL)	DEPTH TO PRODUCT (FT)	APPARENT PRODUCT THICKNESS (FT)	STATIC DEPTH TO WATER (FT)	CORRECTED DEPTH TO WATER (FT)	CORRECTED WATER LEVEL ELEVATION (FT MSL)
MW-1(R)	635.47	9.78	1.57	11.35	9.94	625.53
MW-2(R)	632.14	NONE	NONE	7.03	7.03	625.11
MW-3	632.56	7.02	0.68	7.70	7.07	625.49
MW-4	632.50	NONE*	NONE	7.30*	7.30	625.20
MW-5	632.42	NONE*	NONE	6.74*	6.74	625.68
MW-6(R)	632.42	5.48	0.07	5.55	5.49	626.93
MW-7	630.68	NONE	NONE	4.30	4.30	626.38
MW-8	630.56	NONE	NONE	2.04	2.04	628.52
MW-9	631.69	NONE	NONE	6.95	6.95	624.74
MW-10	631.52	7.73	0.33	8.06	7.78	623.74
MW-11S	632.98	7.56	4.64	12.20	7.88	625.08
MW-11I	632.82	NONE	NONE	7.59	7.59	625.23
MW-11D	632.42	NONE	NONE	5.56	5.56	626.86
MW-12R	634.33	NONE	NONE	9.05	9.05	625.28
MW-13S	631.23	NOT	COLLECTED			
MW-13(R)	630.59	NONE	NONE	5.55	5.55	625.04
MW-13I	630.66	NOT	COLLECTED			
MW-14S	628.41	NONE	NONE	3.75	3.75	624.66
MW-14I	628.23	NONE	NONE	3.30	3.30	624.93
MW-14D	628.53	NONE*	NONE	1.69*	1.69	626.84
MW-15S	636.77	NONE	NONE	11.23	11.23	625.54
MW-15I	636.68	NONE	NONE	11.15	11.15	625.51
MW-16S	634.47	NONE*	NONE	4.94*	4.94	629.53
MW-16I	634.96	NONE*	NONE	9.17*	9.17	625.79
MW-17S	634.79	NONE	NONE	9.03	9.03	625.76
MW-17D	634.86	9.27	0.00	9.27	9.27	625.59
MW-18S	631.26	NONE*	NONE	5.97*	5.97	625.29
MW-18I	631.04	NONE	NONE	5.52	5.52	625.52
MW-18D	630.77	NONE	NONE	4.51	4.51	626.26
MW-19	638.88	NONE	NONE	12.62	12.62	626.26
MW-20	636.77	NONE	NONE	6.32	6.32	630.45
MW-21	628.80	NONE	NONE	4.12	4.12	624.68
MW-22	628.74	CASING	IS	OBSTRUCTED		628.74
MW-23	630.64	NONE	NONE	2.50	2.50	628.14
MW-24	629.03	CASING	IS	OBSTRUCTED		629.03
MW-25	627.33	NONE	NONE	2.60	2.60	624.73
MW-26	633.26	NONE	NONE	8.00	8.00	625.26
RW-1	637.38	11.56	SHEEN	11.56	11.56	625.82
RW-2	631.68	NONE	NONE	6.57	6.57	625.11
RW-3	631.99	NONE	NONE	5.36	5.36	626.63
CW-1	634.35	7.72	0.01	7.73	7.72	626.63
CW-3	633.30	NONE	NONE	7.19	7.19	626.11
GEI-1I	630.78	NOT	COLLECTED			
GEI-2S	637.67	NONE	NONE	11.43	11.43	626.24
GEI-2I	638.20	NONE*	NONE	11.69*	11.69	626.51
GEI-3I	639.85	NONE	NONE	13.88	13.88	625.97

TABLE 3
WATER LEVEL/PRODUCT THICKNESS MEASUREMENT DATA
SEPTEMBER 18 AND 19, 1996
L.E. CARPENTER SITE
WHARTON, NEW JERSEY

MONITORING POINT DESIGNATION	MEASURING POINT ELEVATION (FT. MSL)	DEPTH TO PRODUCT (FT)	APPARENT PRODUCT THICKNESS (FT)	STATIC DEPTH TO WATER (FT)	CORRECTED DEPTH TO WATER (FT)	CORRECTED WATER LEVEL ELEVATION (FT MSL)
WP-A1	635.81	9.95	1.61	11.56	10.18	625.63
WP-A2	639.19	CASING	IS	OBSTRUCTED	BENT CASING	BENT CASING
WP-A3	635.56	NOT	COLLECTED			
WP-A4	NO ACCESS	NO ACCESS	NO ACCESS	NO ACCESS	NO ACCESS	NO ACCESS
WP-A5	637.85	NONE	NONE	11.16	11.16	626.69
WP-A6	637.28	11.78	SHEEN	11.78	11.78	625.50
WP-A7	634.88	9.10	SHEEN	9.10	9.10	625.78
WP-A8	637.56	12.08	1.60	13.68	12.18	625.38
WP-A9	639.32	13.19	0.71	13.90	13.20	626.12
WP-B1	633.65	NONE	NONE	4.71	4.71	628.94
WP-B2	632.25	NONE	NONE	6.94	6.94	625.31
WP-B3	633.33	NONE	NONE	6.48	6.48	626.85
WP-B4	632.56	6.90	1.71	8.61	7.05	625.51
WP-B5	632.11	CASING	IS	OBSTRUCTED		
WP-B6	631.86	NONE	NONE	4.49	4.49	627.37
WP-B7	629.49	3.45	0.30	3.75	3.49	626.00
WP-B8	629.29	NONE	NONE	3.81	3.81	625.48
WP-B10	632.74	NONE	NONE	7.08	7.08	625.66
WP-C1	633.51	NONE	NONE	6.85	6.85	626.66
WP-C2	634.46	NONE	NONE	7.78	7.78	626.68
WP-C3	632.64	NONE	NONE	6.20	6.20	626.44
WP-C4	633.27	NONE	NONE	6.97	6.97	626.30
DC-P0	625.75	NOT	COLLECTED			
DC-P1	625.24	NONE	NONE	0.71	0.71	624.53
DC-P2	626.91	NONE	NONE	2.41	2.41	624.50
DC-P3	625.22	NONE	NONE	0.60	0.60	624.62
DC-P4	625.12	NONE	NONE	0.60	0.60	624.52
DC-P5	625.17	NONE	NONE	0.65	0.65	624.52
RP-01	629.65	NONE	NONE	2.61	2.61	627.04
RP-02	627.75	NONE	NONE	1.52	1.52	626.23
RP-03	627.11	NONE	NONE	2.32	2.32	624.79
RP-04	642.28	NONE	NONE	2.35	2.35	639.93

NOTE:

- WHERE SPECIFIC GRAVITY WAS NOT BE MEASURED, ASSUME A PRODUCT SPECIFIC GRAVITY OF 0.86
- WATER LEVEL MEASUREMENTS MARKED BY BOLD TYPE AND AN ASTERIK WERE COLLECTED ON SEPTEMBER 19 ALL OTHER WATER LEVEL MEASUREMENTS WERE COLLECTED ON SEPTEMBER 18

TABLE 4
THIRD QUARTER 1996 ANALYTICAL RESULTS
L.E. CARPENTER SITE
WHARTON, NEW JERSEY

Sample ID	NJDEP Class IIA	MW-4	MW-14I	MW-15S	MW-15I	MW-22	MW-25	MW-30	9-16_FB01	Trip_Blank
Lab Sample Number	Groundwater	62523	62520	62518	62517	62522	62521	62519	62524	62525
Sampling Date	Criteria (ug/l)	9/17/96	9/17/96	9/17/96	9/17/96	9/17/96	9/17/96	9/17/96	9/17/96	9/16/96
Dilution Factor		1.0	1.0	1.0	1.0	25.0	1.0	1.0	1.0	1.0
Units		ug/l	ug/l	ug/l	ug/l	ug/L	ug/l	ug/l	ug/l	ug/l
VOLATILE COMPOUNDS										
Benzene	1	0.10 U	0.10 U	0.10 U	0.10 U	2.5 U	0.10 U	0.10 U	0.10 U	0.10 U
Toluene	500 (1)	0.14 U	0.14 U	0.14 U	0.14 U	3.5 U	0.14 U	0.14 U	0.14 U	0.14 U
Ethylbenzene	350 (1)	6.8	0.14 U	0.14 U	0.14 U	359	0.34	0.14 U	0.14 U	0.14 U
Xylene(Total)	20 (1)	4.3	0.50 U	0.50 U	0.50 U	1,320	2.20	0.50 U	0.50 U	0.50 U
Total Confident Conc. VOAs (s)		11.1	U	U	U	1,679	2.54	U	U	U

NOTES:

Samples analyzed by Method 602.

ug/l denotes microgram per liter.

Sample MW-30 is a duplicate of MW-15I.

U denotes not detected.

(1) Discharge criteria established in ROD.

Shading denotes the value exceeds the NJDEP Class IIA Groundwater Criteria.

TABLE 5
SPECIFIC GRAVITY RESULTS
L.E. CARPENTER SITE
WHARTON, NJ

MONITORING WELL	SPECIFIC GRAVITY
MW-1R	0.900
MW-3	0.920
MW-6R	0.900
MW-11S	0.930
WP-A6	0.940
WP-A7	0.940
WP-A8	0.940
WP-A9	0.980
WP-B3	0.940
WP-B4	0.910
WP-B5	0.915

NOTES:

- * Specific gravity measurements could not be conducted on all product bearing wells due to insufficient quantities.
- * Specific gravity was field determined.



APPENDIX C

MONITORING WELL SAMPLING DATA FORMS



MONITORING WELL SAMPLING DATA FORM

Well No.: MW-4 Date: 9/17/96 Time: 0920

Boring Diameter: _____ Well Casing Diameter: _____

Annular Space Length: _____ Stickup: _____

COLUMN OF WATER IN WELL

Casing Length (feet): 12.22
DTW Top of Casing (feet): 7.92
Column of Water in Well (feet): 4.3

VOLUME TO BE REMOVED

Gallons per foot of casing: 0.167
Column of water length (feet): 4.3
Volume of casing (gallons): 0.72
Number of volumes to be evacuated: 3
Total volume to be evacuated (gallons): 2.2 gal

Method of Purging (pump, bailer, etc.): Bailer (Teflon)

FIELD ANALYSIS

	1 gal	2 gal	3 gal
	Start	Mid	End
Time	<u>925</u>	<u>930</u>	<u>935</u>
pH	<u>6.26</u>	<u>6.06</u>	<u>6.12</u>
Conductivity (umhos) mV/cm	<u>.307</u>	<u>.015</u>	<u>0.11</u>
Temperature (celsius)	<u>16.3</u>	<u>15.8</u>	<u>15.6</u>
millivolts	<u>-025</u>	<u>-050</u>	<u>-053</u>
Total Volume Purged: <u>3</u> gallons			

Sample Time: 0940 Sample No.: MW-4Parameters: BTEX

Comments: _____

Signed/Sampler: John F. [Signature] Date: 9/17/96Signed/Reviewer: John F. [Signature] Date: 9/18/96

WESTERN**MONITORING WELL SAMPLING DATA FORM**Well No.: mw-155 Date: 9/17/96 Time: 0920Boring Diameter: ≈ 8" Well Casing Diameter: 4"Annular Space Length: _____ Stickup: 1.94' steel**COLUMN OF WATER IN WELL**Casing Length (feet): 19.51
DTW Top of Casing (feet): 11.98
Column of Water in Well (feet): 7.53**VOLUME TO BE REMOVED**Gallons per foot of casing: 0.65
Column of water length (feet): 7.53
Volume of casing (gallons): 4.89
Number of volumes to be evacuated: 3
Total volume to be evacuated (gallons): 14.68 ~ 14.7Method of Purging (pump, bailer, etc.): Bailer (teflon)**FIELD ANALYSIS**

	5 gal Start	Mid	End
Time	<u>0815</u>	<u>0824</u>	<u>0830</u>
pH	<u>5.94</u>	<u>6.38</u>	<u>6.14</u>
Conductivity (nmhos) $\mu S/cm$	<u>.003</u>	<u>.226</u>	<u>.115</u>
Temperature (celsius)	<u>16.7</u>	<u>16.4</u>	<u>16.2</u>
millivolts	<u>326</u>	<u>114</u>	<u>081</u>

Total Volume Purged: 15 gallons

Sample Time: 0840 Sample No.: MW-155Parameters: BTEX

Comments: _____

Signed/Sampler: John F. Lix Date: 9/17/96Signed/Reviewer: John F. Lix Date: 9/18/96

WESTERN**MONITORING WELL SAMPLING DATA FORM**Well No.: MW-15 I Date: 9/17/96 Time: 0755Boring Diameter: ~ 6" Well Casing Diameter: 2'Annular Space Length: ~ 40' Stickup: 1.92' steel**COLUMN OF WATER IN WELL**Casing Length (feet): 39.55
DTW Top of Casing (feet): 11.87
Column of Water in Well (feet): 27.68**VOLUME TO BE REMOVED**Gallons per foot of casing: 0.167
Column of water length (feet): 27.68
Volume of casing (gallons): 4.62
Number of volumes to be evacuated: 3
Total volume to be evacuated (gallons): 13.9Method of Purging (pump, bailer, etc.): Bailer (Teflon)**FIELD ANALYSIS**

	0 gal Start	5 gal Mid	10 gal End	15 gal
Time	<u>0805</u>	<u>0820</u>	<u>0827</u>	<u>0835</u>
pH	<u>5.8</u>	<u>6.10</u>	<u>6.35</u>	<u>6.66</u>
Conductivity (nmHOS) mV/cm	<u>.140</u>	<u>.320</u>	<u>.268</u>	<u>.278</u>
Temperature (celsius)	<u>17.5</u>	<u>14.7</u>	<u>14.6</u>	<u>14.6</u>
millivolts	<u>265</u>	<u>-029</u>	<u>-071</u>	<u>-080</u>

Total Volume Purged: 15 gallons

Sample Time: 0840 Sample No.: MW-15 IParameters: BTEXComments: Blind duplicate sample (MW-30) was collected
at this location.Signed/Sampler: John Fix Date: 9/17/96
Signed/Reviewer: John Fix Date: 9/18/96



MONITORING WELL SAMPLING DATA FORM

Well No.: MW-14I Date: 9/17/96 Time: 0955Boring Diameter: 4" Well Casing Diameter: 2"

Annular Space Length: _____ Stickup: _____

COLUMN OF WATER IN WELL

Casing Length (feet): 43.32
DTW Top of Casing (feet): 3.90
Column of Water in Well (feet): 39.42

VOLUME TO BE REMOVED

Gallons per foot of casing: 0.167
Column of water length (feet): 39.42
Volume of casing (gallons): 6.6
Number of volumes to be evacuated: 3
Total volume to be evacuated (gallons): 19.7

Method of Purging (pump, bailer, etc.): Bailer (Teflon)

FIELD ANALYSIS

	5 gal Start	10 gal Mid	15 gal End	20 gal
Time	<u>1000</u>	<u>1005</u>	<u>1010</u>	<u>1015</u>
pH	<u>7.2</u>	<u>7.41</u>	<u>7.41</u>	<u>7.53</u>
Conductivity (μ mhos/cm)	<u>.003</u>	<u>.005</u>	<u>.005</u>	<u>0.11</u>
Temperature (celsius)	<u>17</u>	<u>14.1</u>	<u>13.8</u>	<u>13.6</u>
millivolts	<u>0</u>	<u>044</u>	<u>076</u>	<u>102</u>

Total Volume Purged: 20 gallonsSample Time: 1030 Sample No.: MW-14IParameters: BTEX

Comments: _____

Signed/Sampler: John FixDate: 9/17/96Signed/Reviewer: John FixDate: 9/18/96



MONITORING WELL SAMPLING DATA FORM

Well No.: MW-22 Date: 9/17/96 Time: 1150

Boring Diameter: _____ Well Casing Diameter: _____

Annular Space Length: _____ Stickup: _____

COLUMN OF WATER IN WELL

Casing Length (feet): 13.06
DTW Top of Casing (feet): 4.70
Column of Water in Well (feet): 8.36

VOLUME TO BE REMOVED

Gallons per foot of casing: 0.167
Column of water length (feet): 8.36
Volume of casing (gallons): 1.39
Number of volumes to be evacuated: 3
Total volume to be evacuated (gallons): 4.18

Method of Purging (pump, bailer, etc.): Peristaltic Pump

FIELD ANALYSIS

	1gal Start	3gal Mid	5gal End
Time	<u>1210</u>	<u>1226</u>	<u>1240</u>
pH	<u>6.20</u>	<u>6.31</u>	<u>6.36</u>
Conductivity (nmHOS)	<u>.683</u>	<u>.361</u>	<u>.374</u>
Temperature (celsius)	<u>17</u>	<u>16.7</u>	<u>16.7</u>
	<u>015</u>	<u>009</u>	<u>007</u>

Total Volume Purged: 6 gallonsSample Time: 1245 Sample No.: MW-22Parameters: BTEX

Comments: _____

Signed/Sampler: John Fix Date: 9/17/96Signed/Reviewer: John Fix Date: 9/18/96

WESTERN**MONITORING WELL SAMPLING DATA FORM**Well No.: MW-25 Date: 9/17/96 Time: 1120

Boring Diameter: _____ Well Casing Diameter: _____

Annular Space Length: _____ Stickup: _____

COLUMN OF WATER IN WELLCasing Length (feet): 12.00
DTW Top of Casing (feet): 3.17
Column of Water in Well (feet): 8.83**VOLUME TO BE REMOVED**Gallons per foot of casing: 0.167
Column of water length (feet): 8.83
Volume of casing (gallons): 1.47
Number of volumes to be evacuated: 3
Total volume to be evacuated (gallons): 4.4Method of Purging (pump, bailer, etc.): Well Wizard**FIELD ANALYSIS**

	Start	Mid	End
Time	<u>1130</u>		<u>1220</u>
pH	<u>6.68</u>		<u>6.62</u>
Conductivity (nmHOS) mS/cm	<u>0.011</u>		<u>0.014</u>
Temperature (celsius)	<u>16.1</u>		<u>16.0</u>
millivolts	<u>-023</u>		<u>-037</u>
Total Volume Purged: <u>≈6.25</u> gallons			

Sample Time: 1250 Sample No.: MW-25Parameters: BTEXComments: Flow rate ≈ 1 gallon per 8 minutesSigned/Sampler: John F. J. Date: 9/17/96Signed/Reviewer: John F. J. Date: 9/18/96



APPENDIX D

GROUNDWATER DATA PACKAGE SUMMARY PAGES

ENVIROTECH RESEARCH, INC.

777 New Durham Road
Edison, New Jersey 08817
Tel: (908) 549-3900
Fax: (908) 549-3679

October 07, 1996

Roy F. Weston, Inc.
Raritan Plaza III, Suite 2B
101 Fieldcrest Ave.
Edison, NJ 08837-3616

Attention: Dr. Daniel Van Voorhis

Re: Job No. Q196 - L.E. Carpenter

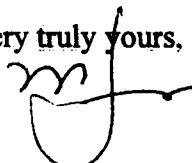
Dear Dr. Van Voorhis:

Enclosed are the results you requested for the following sample(s) received at our laboratory on September 17, 1996:

<u>Lab No.</u>	<u>Client ID</u>	<u>Analysis Required</u>
62517	MW-15I	BTEX (GC)
62518	MW-15S	BTEX (GC)
62519	MW-30	BTEX (GC)
62520	MW-14I	BTEX (GC)
62521	MW-25	BTEX (GC)
62522	MW-22	BTEX (GC)
62523	MW-4	BTEX (GC)
62524	9-16_FB01	BTEX (GC)
62525	Trip_Blank	BTEX (GC)

An invoice for our services is also enclosed. If you have any questions please contact your Project Manager, Kevin Hoogerhyde, at (908) 549-3900.

Very truly yours,



Michael J. Urban
Laboratory Manager

ENVIROTECH RESEARCH, INC.

Client ID: MW-15I
Site: L.E. Carpenter

Lab Sample No: 62517
Lab Job No: Q196

Date Sampled: 09-17-96
Date Received: 09-17-96
Date Analyzed: 09-19-96
GC Column: DB624
Instrument ID: VOAGC3
Lab File ID: ipid1522.d

Matrix: WATER
Level: Low
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/PID METHOD 602

<u>Parameter</u>	<u>Analytical Result</u> <u>Units: ug/l</u>	<u>Method Detection</u> <u>Limit</u> <u>Units: ug/l</u>
Benzene	ND	0.10
Toluene	ND	0.14
Ethylbenzene	ND	0.14
Xylene (Total)	ND	0.50

ENVIROTECH RESEARCH, INC.

Client ID: MW-15S
Site: L.E. Carpenter

Lab Sample No: 62518
Lab Job No: Q196

Date Sampled: 09-17-96
Date Received: 09-17-96
Date Analyzed: 09-19-96
GC Column: DB624
Instrument ID: VOAGC3
Lab File ID: ipid1523.d

Matrix: WATER
Level: Low
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/PID METHOD 602

<u>Parameter</u>	<u>Analytical Result</u> <u>Units: ug/l</u>	<u>Method Detection</u> <u>Limit</u> <u>Units: ug/l</u>
Benzene	ND	0.10
Toluene	ND	0.14
Ethylbenzene	ND	0.14
Xylene (Total)	ND	0.50

ENVIROTECH RESEARCH, INC.

Client ID: MW-30
Site: L.E. Carpenter

Lab Sample No: 62519
Lab Job No: Q196

Date Sampled: 09-17-96
Date Received: 09-17-96
Date Analyzed: 09-19-96
GC Column: DB624
Instrument ID: VOAGC3
Lab File ID: ipid1524.d

Matrix: WATER
Level: Low
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/PID METHOD 602

<u>Parameter</u>	Analytical Result <u>Units: ug/l</u>	Method Detection
		Limit <u>Units: ug/l</u>
Benzene	ND	0.10
Toluene	ND	0.14
Ethylbenzene	ND	0.14
Xylene (Total)	ND	0.50

ENVIROTECH RESEARCH, INC.

Client ID: MW-141
Site: L.E. Carpenter

Lab Sample No: 62520
Lab Job No: Q196

Date Sampled: 09-17-96
Date Received: 09-17-96
Date Analyzed: 09-19-96
GC Column: DB624
Instrument ID: VOAGC3
Lab File ID: ipid1525.d

Matrix: WATER
Level: Low
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/PID METHOD 602

<u>Parameter</u>	<u>Analytical Result</u> <u>Units: ug/l</u>	<u>Method Detection</u> <u>Limit</u> <u>Units: ug/l</u>
Benzene	ND	0.10
Toluene	ND	0.14
Ethylbenzene	ND	0.14
Xylene (Total)	ND	0.50

ENVIROTECH RESEARCH, INC.

Client ID: MW-25
Site: L.E. Carpenter

Lab Sample No: 62521
Lab Job No: Q196

Date Sampled: 09-17-96
Date Received: 09-17-96
Date Analyzed: 09-19-96
GC Column: DB624
Instrument ID: VOAGC3
Lab File ID: ipid1526.d

Matrix: WATER
Level: Low
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/PID METHOD 602

<u>Parameter</u>	<u>Analytical Result</u> <u>Units: ug/l</u>	<u>Method Detection</u> <u>Limit</u> <u>Units: ug/l</u>
Benzene	ND	0.10
Toluene	ND	0.14
Ethylbenzene	0.34	0.14
Xylene (Total)	2.2	0.50

ENVIROTECH RESEARCH, INC.

Client ID: MW-22
Site: L.E. Carpenter

Lab Sample No: 62522
Lab Job No: Q196

Date Sampled: 09-17-96
Date Received: 09-17-96
Date Analyzed: 09-19-96
GC Column: DB624
Instrument ID: VOAGC3
Lab File ID: ipid1527.d

Matrix: WATER
Level: Low
Purge Volume: 5.0 ml
Dilution Factor: 25.0

VOLATILE ORGANICS - GC/PID METHOD 602

<u>Parameter</u>	<u>Analytical Result</u> <u>Units: ug/l</u>	<u>Method Detection</u> <u>Limit</u> <u>Units: ug/l</u>
Benzene	ND	2.5
Toluene	ND	3.5
Ethylbenzene	359	3.5
Xylene (Total)	1320	12

ENVIROTECH RESEARCH, INC.

Client ID: MW-4
Site: L.E. Carpenter

Lab Sample No: 62523
Lab Job No: Q196

Date Sampled: 09-17-96
Date Received: 09-17-96
Date Analyzed: 09-19-96
GC Column: DB624
Instrument ID: VOAGC3
Lab File ID: ipid1528.d

Matrix: WATER
Level: Low
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/PID METHOD 602

<u>Parameter</u>	<u>Analytical Result</u> <u>Units: ug/l</u>	<u>Method Detection</u>
		<u>Limit</u> <u>Units: ug/l</u>
Benzene	ND	0.10
Toluene	ND	0.14
Ethylbenzene	6.8	0.14
Xylene (Total)	4.3	0.50

ENVIROTECH RESEARCH, INC.

Client ID: 9-16_FB01
Site: L.E. Carpenter

Lab Sample No: 62524
Lab Job No: Q196

Date Sampled: 09-17-96
Date Received: 09-17-96
Date Analyzed: 09-19-96
GC Column: DB624
Instrument ID: VOAGC3
Lab File ID: ipid1520.d

Matrix: WATER
Level: Low
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/PID METHOD 602

<u>Parameter</u>	<u>Analytical Result</u> <u>Units: ug/l</u>	<u>Method Detection</u> <u>Limit</u> <u>Units: ug/l</u>
Benzene	ND	0.10
Toluene	ND	0.14
Ethylbenzene	ND	0.14
Xylene (Total)	ND	0.50

ENVIROTECH RESEARCH, INC.

Client ID: Trip_Blank
Site: L.E. Carpenter

Lab Sample No: 62525
Lab Job No: Q196

Date Sampled: 09-16-96
Date Received: 09-17-96
Date Analyzed: 09-19-96
GC Column: DB624
Instrument ID: VOAGC3
Lab File ID: ipid1521.d

Matrix: WATER
Level: Low
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/PID METHOD 602

<u>Parameter</u>	<u>Analytical Result</u> <u>Units: ug/l</u>	<u>Method Detection</u> <u>Limit</u> <u>Units: ug/l</u>
Benzene	ND	0.10
Toluene	ND	0.14
Ethylbenzene	ND	0.14
Xylene (Total)	ND	0.50

Custody Transfer Record/Lab Work Request

Refrigerator #

#/Type Container

Volume

Preservatives

ANALYSES
REQUESTED

ORGANIC

VOA

BNA

Pest/
PCB

Herb

INORG

Metal

CN

Date Rec'd

Date Due

Account #

Lab
ID

Client ID/Description

Matrix
QC
Chosen
(✓)

MS MSD

Matrix

Date
CollectedTime
Collected

WESTON Analytics Use Only

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:

-Analyze for BTEX using
method 602.

DATE/REVISIONS:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

WESTON Analytics Use Only

Samples were:

1) Shipped ____ or
Hand Delivered ____
Airbill # _____

2) Ambient or Chilled

3) Received in Good
Condition Y or N

4) Labels Indicate
Properly Preserved
Y or N

5) Received Within
Holding Times
Y or N

COC Tape was:

1) Present on Outer
Package Y or N

2) Unbroken on Outer
Package Y or N

3) Present on Sample
Y or N

4) Unbroken on
Sample Y or N

COC Record Present
Upon Sample Rec't
Y or N

Relinquished
byReceived
by

Date

Time

Relinquished
byReceived
by

Date

Time

Discrepancies Between
Samples Labels and
COC Record? Y or N
NOTES: